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EXAMINER	
PERRY, ANTHONY T	
ART UNIT	**PAPER NUMBER**
2879	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 09/900,738	**Applicant(s)** SHIMODA ET AL.
	Examiner Anthony T Perry	**Art Unit** 2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 07 September 2004.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 06 June 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The Amendment filed on 09/07/04, has been entered and acknowledged by the Examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though thc invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5-6, 8-12, 17-20, and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swirbel et al. (US 6,091,194) in view of Shi et al. (US 5,693,962) and further in view of Smith (US 6,291,896).

Regarding claim 1, Swirbel teaches a manufacturing method for a display that uses an organic EL element in a display portion (col. 3, line 63 – col. 4, line50). The method involves respectively preparing a circuit substrate 20 and a transparent substrate 30 and then sticking them together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the organic EL element 40 set at positions corresponding to pixels and with wiring 27 formed on either its top or bottom surface (col. 4, line 9-13). The transparent substrate 30 with a transparent electrode layer 32 common with the pixels laminated on the surface. Swirbel does not specifically teach forming an insulating layer with openings on the transparent electrode layer, with the organic EL layer and cathode layer formed in the openings of the insulating layer.

However, the Shi reference teaches forming an insulating layer (103) with openings on the transparent electrode layer, with the emissive layers (202,203,204) containing an organic EL

layer and cathode layer formed in the openings of the insulating layer at positions corresponding to pixels so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with openings filled with organic EL layers and cathode layers in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 5, Fig. 2 of the Swirbel reference discloses an organic EL display 10 which uses an organic element 40 in a display portion. Microstructures made with drive circuits

24 for the organic EL element are set at positions corresponding to pixels of a first substrate 20. An emissive layer containing the organic EL layer is formed on the second substrate 30 and the first and second substrates are stuck together. Swirbel does not specifically teach a plurality of emissive layer portions separated by an insulating material.

However, the Shi reference teaches a plurality of emissive layer portions (202,203,204) separated by an insulating material (103) so that organic EL layer portions having different hues can be alternated allowing for a multicolor display (see Fig. 5).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with openings filled with organic EL layers and cathode layers in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is

formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 6, Swirbel discloses an organic EL display that uses an organic EL element in a display portion (see Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the organic EL element 40 set at positions corresponding to pixels and with wiring 27 formed on its top and/or bottom surfaces (col. 4, line 9-13). The transparent substrate 30 has a transparent electrode layer 32 common with the pixels laminated on its surface. The two substrates are stuck together with the cathode layer and wiring between the two substrates. Swirbel does not specifically teach an array of active areas separated by banks of an insulating material on the transparent electrode layer.

However, the Shi reference teaches an array of active areas (202,203,204) separated by banks of an insulating material (103) so that organic EL layer portions having different hues can be alternated allowing for a multicolor display (see Fig. 5).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an array of active areas (202,203,204) separated by banks of an insulating material (103) in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 8, Swirbel teaches a manufacturing method for a display that uses electro-optic elements in a display portion (col. 3, line 63 – col. 4, line 50). The method involves respectively preparing a circuit substrate 20 and a transparent substrate 30 and then sticking them together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the electro-optic elements 40 set at positions corresponding to pixels. The electro-optic elements 40 are formed on the transparent substrate at positions corresponding to pixels. Swirbel teaches the substrates being stuck together with the side of the transparent substrate with the electro-optic elements formed thereon facing towards the inside.

Swirbel does not specifically teach the side of the circuit substrate with the driving circuits formed thereon facing the inside. However, it is noted that the applicant's specific arrangement of the driving circuits being on the side facing towards the inside does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in

the art would have found obvious to select either side of the substrate (inside or outside) for the drive circuits as long as they are connected to their respective electrodes.

Swirbel does not specifically teach the electro-optic elements separated by banks of an insulating material on the transparent electrode layer. However, the Shi reference teaches electro-optic elements (202,203,204) separated by banks of an insulating material (103) so that organic EL layer portions having different hues can be alternated allowing for a multicolor display (see Fig. 5).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an array of active areas (202,203,204) separated by banks of an insulating material (103) in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is

formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 9, Fig. 2 of the Swirbel reference discloses an electro-optic device 10 which uses electro-optic elements in a display portion. Microstructures made with drive circuits 24 for the electro-optic elements are set at positions corresponding to pixels of a first substrate 20. An electro-optic layer 40 is formed on the second substrate 30 and the first and second substrates are stuck together.

Swirbel does not specifically teach a plurality of emissive layer portions separated by an insulating material on the transparent electrode layer. However, the Shi reference teaches emissive layer portions (202,203,204) separated by an insulating material (103) so that organic EL layer portions having different hues can be alternated allowing for a multicolor display (see Fig. 5).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an array of active areas (202,203,204) separated by banks of an insulating material (103) in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching

means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 10, Swirbel teaches that such electro-optic devices are commonly used in electronic devices (col. 1, lines 13-14).

Regarding claim 11, Swirbel teaches a manufacturing method for a display that uses an organic EL element in a display portion (col. 3, line 63 – col. 4, line50). The method involves respectively preparing a circuit substrate 20 and a transparent substrate 30 and then sticking them together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the organic EL element 40 set at positions corresponding to pixels and with wiring 27 formed on either its top or bottom surface (col. 4, line 9-13). The transparent substrate 30 with a transparent electrode layer 32 common with the pixels laminated on the surface. The organic EL layer is laminated on the upper surface of the transparent electrode layer. Swirbel teaches that the cathode layer 22 is laminated on the circuit substrate rather than the transparent substrate.

It is noted that the applicant's specific intermediate location of the cathode layer, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select either substrate (circuit or transparent) to deposit the cathode layer.

The substrates are stuck together with the cathode layer connected to the wiring in between the two substrates. Swirbel does not specifically teach forming an insulating layer with openings on the transparent electrode layer, with the organic EL layer and cathode layer formed in the openings of the insulating layer.

However, the Shi reference teaches forming an insulating layer (103) with openings on the transparent electrode layer, with the emissive layers (202,203,204) containing an organic EL layer and cathode layer formed in the openings of the insulating layer at positions corresponding to pixels so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with openings filled with organic EL layers and cathode layers in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the

microstructures made with drive circuits, it is conventional to include the steps of: first coating a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures; next forming through holes in the protective layer; and then providing wiring over the protective layer and through the vias so as to connect the wiring to the microstructures through vias formed in the protective layer.

Regarding claim 12, Smith teaches that the microstructures include drive circuits (see for example col. 4, lines 14-25).

Reason for combination given in claim 11 applies.

Regarding claim 17, Fig. 2 of the Swirbel reference discloses an organic EL display 10 which uses an organic element 40 in a display portion. Microstructures made with drive circuits 24 for the organic EL element are set at positions corresponding to pixels of a first substrate 20. An emissive layer containing the organic EL layer is formed on the second substrate 30 and the first and second substrates are stuck together.

Swirbel does not specifically teach the emissive layer containing a plurality of organic EL portions separated by an insulating material. However, the Shi reference teaches the emissive layer containing a plurality of organic EL portions separated by an insulating material so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an emissive layer containing a plurality of organic EL portions separated by an insulating material in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures and to have wiring formed on its surface and through vias formed in the protective layer such that a first end of the wiring is connected to the microstructures.

Regarding claim 18, Smith teaches that the microstructures include drive circuits (see for example col. 4, lines 14-25).

Reason for combination given in claim 17 applies.

Regarding claim 19, Swirbel teaches an organic EL display (col. 3, line 63 – col. 4, line50). The display comprises a circuit substrate 20 and a transparent substrate 30 and the two are stuck together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the organic EL element 40 set at positions corresponding to pixels and with wiring 27 formed on either its top or bottom surface (col. 4, line 9-13). The transparent substrate 30 with a transparent electrode layer 32 common with the pixels laminated on the surface. The organic EL layer is

laminated on the upper surface of the transparent electrode layer. Swirbel teaches that the cathode layer 22 is laminated on the circuit substrate rather than the transparent substrate.

It is noted that the applicant's specific intermediate location of the cathode layer, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select either substrate (circuit or transparent) to deposit the cathode layer.

The substrates are stuck together with the cathode layer connected to the wiring in between the two substrates. Swirbel does not specifically teach forming an insulating layer with an array of openings on the transparent electrode layer, with the organic EL element and cathode layer formed in the openings of the insulating layer.

However, the Shi reference teaches forming an insulating layer (103) with openings on the transparent electrode layer, with the emissive layers (202,203,204) containing an organic EL element and cathode layer formed in the openings of the insulating layer at positions corresponding to pixels so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with an array of openings filled with organic EL layers and cathode layers in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any

defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to coat a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures. Wiring is formed on its surface connecting to the microstructures through vias formed in the protective layer.

Regarding claim 20, Smith teaches that the microstructures include drive circuits (see for example col. 4, lines 14-25).

Reason for combination given in claim 19 applies.

Regarding claim 23, Swirbel teaches a manufacturing method for an electro-optic device using electro-optic elements in a display portion (col. 3, line 63 – col. 4, line50). The method involves respectively preparing a circuit substrate 20 and a transparent substrate 30 and then sticking them together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the electro-optic elements 40 set at positions corresponding to pixels and with wiring 27 formed on either its top or bottom surface (col. 4, line 9-13). The transparent substrate 30 with a transparent electrode layer 32 common with the pixels laminated on the surface. The electro-optic elements layer is laminated on the upper surface of the transparent electrode layer.

Swirbel does not specifically teach forming an insulating layer with openings on the transparent electrode layer, with the electro-optic elements formed in the openings of the insulating layer. However, the Shi reference teaches forming an insulating layer (103) with openings on the transparent electrode layer, with the electro-optic elements (202,203,204) formed in the openings of the insulating layer at positions corresponding to pixels so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with openings filled with electro-optic elements in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to include the steps of: first coating a protective/insulating layer over the substrate and the functional blocks to protect/insulate the

microstructures; next forming through holes in the protective layer; and then providing wiring over the protective layer and through the vias so as to connect the wiring to the microstructures through vias formed in the protective layer.

The combined invention has the electro-optic elements and the drive circuits between the two substrates.

Regarding claim 24, Smith teaches that the microstructures include drive circuits (see for example col. 4, lines 14-25).

Reason for combination given in claim 23 applies.

Regarding claim 25, Swirbel teaches an electro-optic device using electro-optic elements in a display portion (col. 3, line 63 – col. 4, line50). The device comprises a circuit substrate 20 and a transparent substrate 30 and then sticking them together (Fig. 2). The circuit substrate 20 is made with drive circuits 24 for the electro-optic elements 40 set at positions corresponding to pixels and with wiring 27 formed on either its top or bottom surface (col. 4, line 9-13). The transparent substrate 30 with a transparent electrode layer 32 common with the pixels laminated on the surface. The electro-optic elements layer is laminated on the upper surface of the transparent electrode layer. Swirbel does not specifically teach the electro-optic layer being formed in openings of an insulating layer.

However, the Shi reference teaches forming an insulating layer (103) with openings on the transparent electrode layer, with the electro-optic layer (202,203,204) formed in the openings of the insulating layer at positions corresponding to pixels so that organic EL layers having different hues can be alternated allowing for a multicolor display (see Fig. 5). Shi further teaches

that such a structure provides superior protection against degradation of the display elements (col. 6, lines 16-18).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used an insulating layer with openings filled with the electro-optic layer in order to produce a multicolor display.

Smith teaches the use of functional blocks for driving display devices (see col. 4, lines 14-25). Smith teaches that the functional blocks can be tested before assembly so that any defective elements can be discarded before being mounted in an array onto the substrate (col. 4, lines 35-48). This allows for a cost- effective, efficient and practical method for producing large arrays of electronic elements.

Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use the functional blocks taught by Smith instead of the switching means taught by Swirbel so as to reduce manufacturing costs and to ensure the quality of the individual electronic components of the array. In using such functional blocks as the microstructures made with drive circuits, it is conventional to include the steps of: first coating a protective/insulating layer over the substrate and the functional blocks to protect/insulate the microstructures; next forming through holes in the protective layer; and then providing wiring over the protective layer and through the vias so as to connect the wiring to the microstructures through vias formed in the protective layer.

The combined invention has the electro-optic elements and the drive circuits between the two substrates.

Regarding claim 26, Smith teaches that the microstructures include drive circuits (see for example col. 4, lines 14-25).

Reason for combination given in claim 25 applies.

Regarding claim 27, the transparent electrode described in the rejection of claim 25, above, is an electronic device.

Claims 2, 7, 13-14, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swirbel et al. (US 6,091,194) in view of Shi et al. (US 5,693,962) in view of Smith (US 6,291,896) as applied to claims 1, 6, 11, and19 and further in view of Miyamoto et al. (US 6,039,896).

Regarding claims 2 and 7, Swirbel teaches connecting the substrates with a conductive epoxy which is dispensed on each cathode electrode (col. 4, lines 51-56). Swirbel, Shi, and Smith do not specifically teach the use of an anisotropic conductive paste for sticking together the two substrates.

However, Miyamoto teaches that it is well known to use anisotropic adhesives in flat panel displays for connecting components of such displays. Anisotropic films can be placed along the entire surface of the substrates and its components without the risk of a short-circuit between adjacent terminals in the fine circuits (col. 1, lines 15-32). Instead of selectively printing the conductive adhesive on each cathode electrode as taught by Swirbel, use can be made of an anisotropic film covering the entire substrate and its components, since such films are only conductive in one direction. Accordingly, one of ordinary skill in the art would have found it obvious to use an anisotropic adhesive for connecting the two substrates taught by the

combination of Swirbel, Shi, and Smith in order to simplify the method of connecting the substrates.

Regarding claims 13-14, Swirbel teaches connecting the substrates with a conductive epoxy which is dispensed on each cathode electrode (col. 4, lines 51-56). Swirbel, Shi, and Smith do not specifically teach the use of an anisotropic conductive paste/film for sticking together the two substrates.

However, Miyamoto teaches that it is well known to use anisotropic adhesives in flat panel displays for connecting components of such displays. Anisotropic films can be placed along the entire surface of the substrates and its components without the risk of a short-circuit between adjacent terminals in the fine circuits (col. 1, lines 15-32). Instead of selectively printing the conductive adhesive on each cathode electrode as taught by Swirbel, use can be made of an anisotropic film covering the entire substrate and its components, since such films are only conductive in one direction. Accordingly, one of ordinary skill in the art would have found it obvious to use an anisotropic adhesive for connecting the two substrates taught by the combination of Swirbel, Shi, and Smith in order to simplify the method of connecting the substrates.

Regarding claims 21-22, Swirbel teaches connecting the substrates with a conductive epoxy which is dispensed on each cathode electrode (col. 4, lines 51-56). Swirbel, Shi, and Smith do not specifically teach the use of an anisotropic conductive paste/film for sticking together the two substrates.

However, Miyamoto teaches that it is well known to use anisotropic adhesives in flat panel displays for connecting components of such displays. Anisotropic films can be placed

along the entire surface of the substrates and its components without the risk of a short-circuit between adjacent terminals in the fine circuits (col. 1, lines 15-32). Instead of selectively printing the conductive adhesive on each cathode electrode as taught by Swirbel, use can be made of an anisotropic film covering the entire substrate and its components, since such films are only conductive in one direction. Accordingly, one of ordinary skill in the art would have found it obvious to use an anisotropic adhesive for connecting the two substrates taught by the combination of Swirbel, Shi, and Smith in order to simplify the method of connecting the substrates.

Claims 3-4 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swirbel et al. (US 6,091,194) in view of Shi et al. (US 5,693,962) in view of Smith (US 6,291,896) further in view of Miyamoto et al. (US 6,039,896), and further in view of Sharpless et al (US 5,309,060).

Regarding claims 3-4, neither Swirbel, Shi, Miyamoto, nor Smith specifically teach the method of preparing a roll of the substrates and unrolling them while pressing with a pressing roller from front and rear surfaces to connect the two substrates.

However, Sharpless teaches such a method used in manufacturing an EL display device. Sharpless teaches using flexible substrates, preparing them, and then rolling them up (col. 3, lines 23-32). The prepared substrate rolls 20,30 are then unrolled while inserting an adhesive 40, and pressed with a pressing roller 56,58 from front and rear surfaces to thereby stick together the two substrates (see Fig. 6 and col. 4, lines 3-16). The stuck together product is then cut to a desired length (col. 4, lines 17-32). This method allows for a simpler more cost efficient method

of manufacturing EL display devices. Accordingly, one of ordinary skill in the art would have found it obvious at the time the invention was made to prepare a roll of each substrate and then unroll them while inserting an adhesive in between them and pressing together with a pressing roller and then cutting the stuck together process to a desired length in order to simplify and reduce manufacturing costs.

The reason for combination given in the rejection of claim 2 applies.

Regarding claims 15-16, neither Swirbel, Shi, Miyamoto, nor Smith specifically teach the method of preparing a roll of the substrates and unrolling them while pressing with a pressing roller from front and rear surfaces to connect the two substrates.

However, Sharpless teaches such a method used in manufacturing an EL display device. Sharpless teaches using flexible substrates, preparing them, and then rolling them up (col. 3, lines 23-32). The prepared substrate rolls 20,30 are then unrolled while inserting an adhesive 40, and pressed with a pressing roller 56,58 from front and rear surfaces to thereby stick together the two substrates (see Fig. 6 and col. 4, lines 3-16). The stuck together product is then cut to a desired length (col. 4, lines 17-32). This method allows for a simpler more cost efficient method of manufacturing EL display devices. Accordingly, one of ordinary skill in the art would have found it obvious at the time the invention was made to prepare a roll of each substrate and then unroll them while inserting an anisotropic conductive film in between them and pressing together with a pressing roller and then cutting the stuck together process to a desired length in order to simplify and reduce manufacturing costs.

The reason for combination given in the rejection of claims 13-14 applies.

Response to Arguments

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-24597. **The fax phone number for this Group is (703) 872-9306.**

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Anthony.perry@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

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